A Wide Area Rapid Assessment Technique for Benthic Habitats

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Abstract
Offshore geophysical survey methods provide a rapid and cost-effective tool for environmental assessment of coastal zones, estuaries, rivers, lakes, and other water bodies. Mapping of benthic habitat and subsurface geology by Golder Associates Inc. (Golder), is done from small vessels of opportunity using an integrated combination of side-scan sonars, single or multibeam echosounders, subbottom profilers, underwater video, and the differential global positioning system (DGPS). Surveys conducted to map submerged aquatic vegetation (SAV) (*Zostera* sp. and macroalgae) using solely underwater video can miss important features such as abandoned outfalls, partially buried cables, recreational vessel mooring anchors, and rock outcrops. In addition, video surveys can misrepresent patchy eelgrass conditions as contiguous beds causing erroneous estimates of areal coverage and habitat value. This can cause problems with alignment, site selection, and impact mitigation planning. A side-scan sonar survey, integrated with video images to verify species composition and signal interpretation and real-time DGPS for precise positioning, provides a comprehensive high-resolution map of actual conditions over a relatively large area. Data acquisition and post-processing to produce a map of surficial conditions requires considerably less time and effort compared to mapping the same area by scuba diver or with underwater video alone. The acquired data and images are directly compatible with commonly used geographical information system (GIS) programs. This poster presents results from recent marine geophysical surveys conducted to map and select a route for a proposed fiber optic cable in the San Juan Archipelago, Washington.